10,500 RPM
3.5-Inch SAS AL13SEL Series Hard Disk Drive

TOSHIBA
Leading Innovation

High Capacity, 6 Gb/s SAS Interface Enterprise HDD for Mission-Critical Server and Storage Applications

AL13SEL900
AL13SEL600
AL13SEL450
AL13SEL300

The Toshiba AL13SEL 3.5-inch hard disk models deliver 6 Gb/s SAS interface enterprise-class performance in capacities ranging from 900GB[1] to 300GB.

The AL13SEL models use a 3.5-inch bracket to enable small form factor drives to be used in legacy based 3.5-inch servers and storage enclosures. By incorporating the AL13SE series 2.5-inch drive, the AL13SEL option features a 10,500 RPM spin speed, 6 Gb/sec SAS interface, and the power consumption benefits normally found with small form factor drive technology.

The AL13SE series is the first 10,000 RPM class model enterprise drive from Toshiba to achieve 900GB capacity and is also the first of Toshiba's 10,000 RPM drives to employ a dual-stage head positioning actuator that provides additional performance gains, including a 32% increase in sustained transfer rate.

Designed for even the most demanding mission-critical applications, the AL13SE series features an operating reliability rating of 2,000,000 power-on hours[2], a 25% increase over prior-generation drives. System compatibility is also assured through usage of the industry-standard 512 byte sector size.

In keeping with Toshiba's leadership in power efficiency design, the AL13SE Series uses Supported Enhanced Power Condition State technology to lower RPM idle speed.

The AL13SEL series drive is designed to support enterprise applications where reliability, high capacity, and performance are required. Specific applications include mid-range volume servers, mainstream storage arrays, blade and rackmount servers, and other mission-critical, power-conscious, data-intensive systems.

- Up to 900GB[1] of Storage Capacity
- Enhanced Power Condition State Technology
- 6 Gb/sec SAS
- 64MB Cache Buffer

Hard Drive

10,500 RPM
3.5-Inch SAS Enterprise Hard Disk Drives

TOSHIBA
Leading Innovation

	AL13SEL300	AL13SEL450	AL13SEL600	AL13SEL900
Series Overview				
Drive Capacity	300GB[1]	450GB[1]	600GB[1]	900GB[1]
Drive Interface	SAS 2.0			
RoHS Comliant	Yes			
Transfer Rate to Host	6 Gb/sec			
Performance				
Track-to-track Seek	0.2ms typ. (Read), 22ms typ. (Write)			
Average Seek Time	3.7ms typ. (Read), 4.1 ms typ. (Write)			
Rotational Speed	10,500 RPM			
Average Latency	2.8 ms			
Buffer Size	64MB			
Power Requirements				
Voltage	5V (+/- 5%), 12V (+/- 5%)			
Spin up (start) Power	12V (=/-5%) @ 1.65A (peak) 3.0A (peak < 100us) 1.5V (+/-5%) @ 1.1A (peak)			
Power Idle (Ready)	4.0 watts (max.)			
Physical Size				
Dimensions (W) x (D) x (H)	101.6 mm x 147.0 mm x 26.1 mm			
Weight	520 g, or less			
Environmental				
Temp - Operating	5° to 55°C (41° to 131°F)			
Temp - Non-Operating	-40° to 70°C (-40° to 158°F)			
Humidity - Operating	5% to 95% RH			
Humidity - Non-Operating	5% to 95% RH			
Vibration - Operating	(0.6mm) 5 to 20 Hz / 9.8 m/s^2 (1.0G) 20 to 300 Hz			
Vibration - Non-Operating	(3.1mm) 5 to 20 Hz / 49 m/s^2 (5.0G) 20 to 300 Hz			
Shock - Operating	980 m/s^2 (100G) 1ms			
Shock - Non-Operating	3,920 m/s^2 (400G) 1ms			
Altitude - Operating	-1,000 to 10,000 ft			
Altitude - Non-Operating	-1,000 to 40,000 ft			
Acoustics				
Acoustincs (Ready)	30dB			
Reliability				
Mean Time Between Failures (MTBF)	2,000,000 hours			
Component Life	5 years POH			
Warranty				
Limited Warranty	5 years (from date of purchase)			

Visit us at: **www.toshibastorage.com**

[1]One Gigabyte (1 GB) means 10^9 = 1,000,000,000 bytes using powers of 10. A computer operating system, however, reports storage capacity using powers of 2 for the definition of 1 GB = 2^{30} = 1,073,741,824 bytes, and therefore shows less storage capacity. Available storage capacity will also be less if the computer includes one or more pre-installed operating systems, pre-installed software applications, or media content. Actual formatted capacity may vary.

[2]MTTF is not a guarantee or estimate of product life; it is a statistical value related to mean failure rates for a large number of products, which may not accurately reflect actual operation.

Subject to Change: While Toshiba has made every effort at the time of publication to ensure the accuracy of the information provided herein, product specifications, configurations, prices, system/component/options availability are all subject to change without notice. Product image may represent design model.